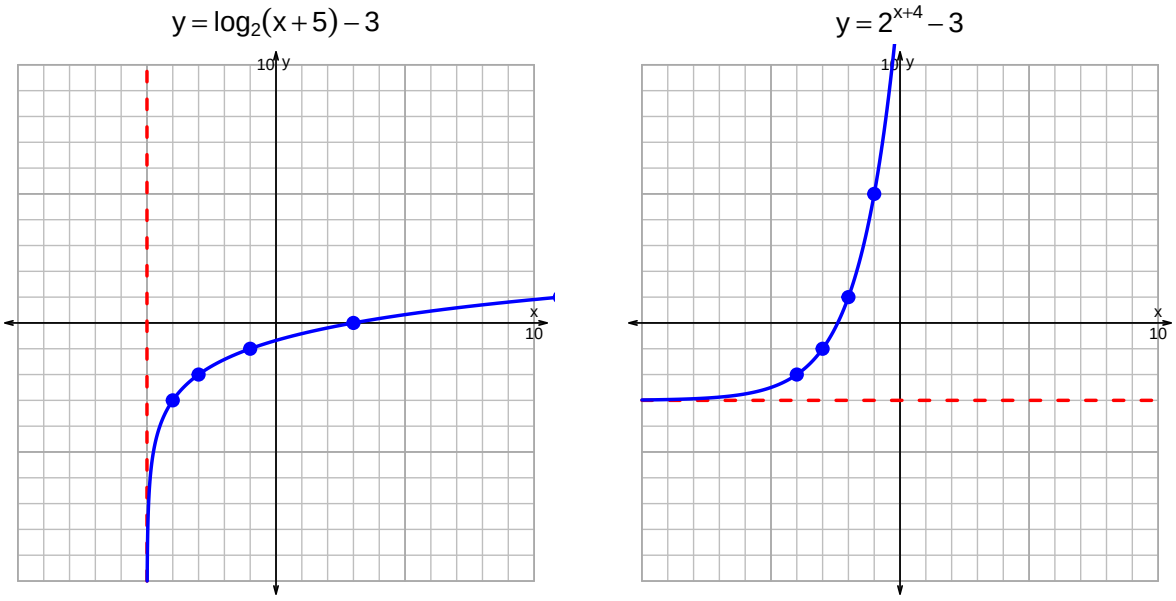
Name: Date:

S18QUIZ: EXP LOG (SLTN v224)

1. Graph $y = \log_2(x+5) - 3$ and $y = 2^{x+4} - 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-13 = \left(\frac{-3}{7}\right) \cdot 10^{-4t/5}$$

Divide both sides by $\frac{-3}{7}$.

$$\frac{13 \cdot 7}{3} = 10^{-4t/5}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{13 \cdot 7}{3}\right) = \frac{-4t}{5}$$

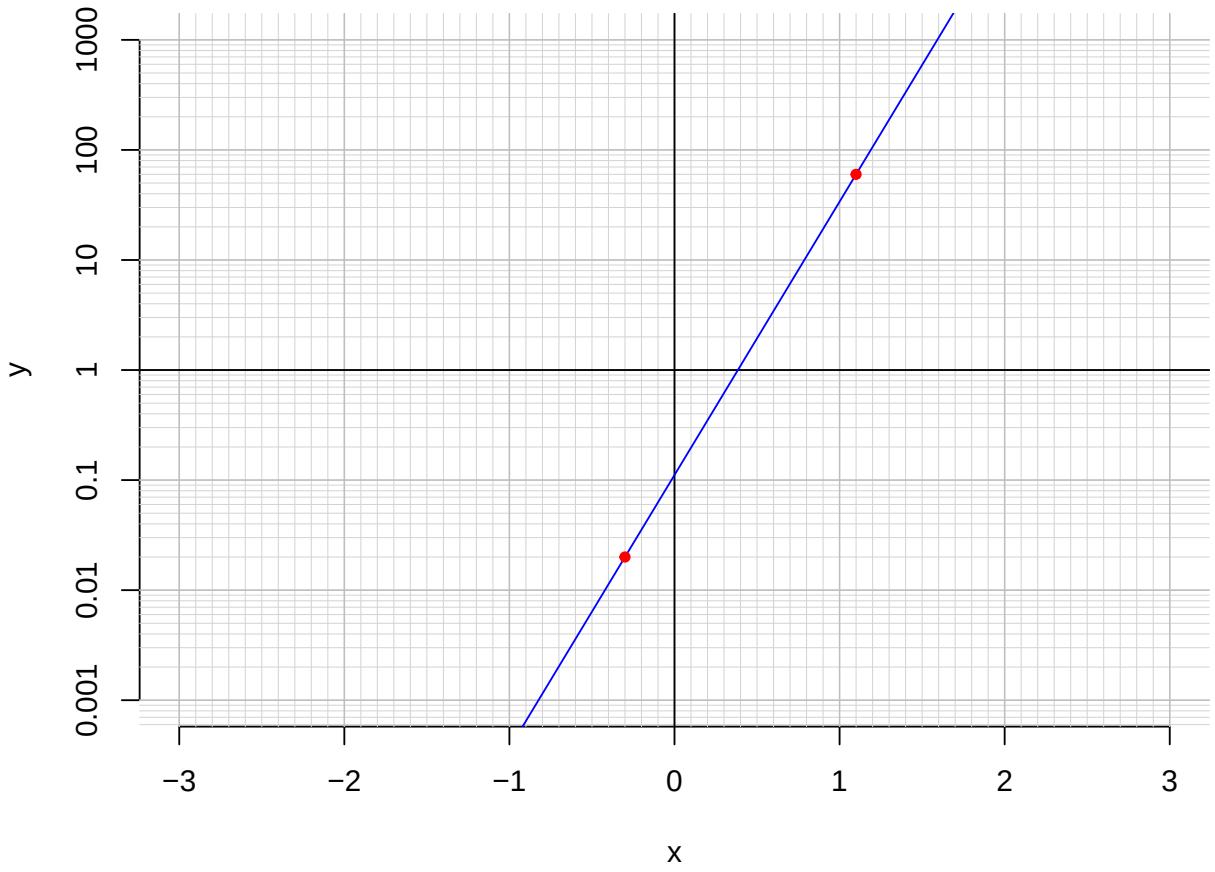
Divide both sides by $\frac{-4}{5}$.

$$\frac{-5}{4} \cdot \log_{10}\left(\frac{13 \cdot 7}{3}\right) = t$$

Switch sides.

$$t = \frac{-5}{4} \cdot \log_{10}\left(\frac{13 \cdot 7}{3}\right)$$

3. An exponential function $f(x) = 0.111 \cdot e^{5.72x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.1)$.

$$f(1.1) = 60$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{5.72} \cdot \ln\left(\frac{x}{0.111}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.02)$.

$$f^{-1}(0.02) = -0.3$$